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APR 09 2007

REMARKS

The above amendments and these remarks are responsive to the Office action dated November 14, 2006. Prior to the entry of these amendments, claims 1, 3, 4, 7-11, 13 and 14 are pending in the application. In the Office action claims 8-10 are rejected under 35 U.S.C. 102(b) based on Watanabe et al. (U.S. Pat. No. 5,787,709), claims 4 and 7 are rejected under 35 U.S.C. 103(a) based on Maeda et al. (U.S. Pat. No. 6,199,376) in view of Mashiko et al. (U.S. Pat. No. 6,454,622), claims 11, 13 and 14 are objected to as being dependent upon a rejected base claim, and claims 1 and 3 are indicated as allowable. Applicant thanks the Examiner for the careful consideration of the application and for the indications of allowability. Applicant traverses the rejections, but nevertheless amends the claims as shown above. In view of the amendments above, and the remarks below, applicant respectfully requests reconsideration of the application under 37 C.F.R. § 1.111 and allowance of the pending claims.

Claims 11-14 (objected to)

Applicant has amended claim 11 to include the base claim and any intervening claims. Accordingly, claim 11 is believed to be in condition for allowance as indicated by the Office action. Claims 13 and 14 depend from claim 11 and are believed to be in condition for allowance for at least the same reasons.

Claims 8-10 (rejected under 35 U.S.C. 102(b))

Applicant has amended independent claim 8 to include, among other features, "an exhaust manifold formed in one unitary, integrally cast piece and having an upstream end portion which is connected to the cylinders and including a plurality of exhaust passages corresponding to exhaust ports of the cylinders, respectively."

In contrast, Watanabe does not disclose an exhaust manifold formed in one unitary, integrally cast piece. Rather, Watanabe discloses an exhaust pipe collecting structure including four separate pipes welded together. The configuration disclosed by Watanabe is similar to that described in the background art in Applicant's specification. In particular, in the invention of Watanabe, four separate exhaust pipes extend from exhaust ports of the engine, with downstream portions that have a reduced diameter and abut together to fit into a single pipe. Since the plurality of exhaust pipes are directly inserted into the connecting tube having a large diameter, a disturbed flow occurs inside the connecting tube, decreasing gas exhausting efficiency.

In addition, since it is necessary to connect the exhaust pipes and the connecting tube to each other integrally by welding, the four exhaust pipes are inseparable, thus it is difficult to assemble and disassemble them into and from the engine within a limited space.

In contrast to Watanabe, the exhaust pipe collecting structure recited in amended claim 8 comprises an exhaust manifold formed in one unitary, integrally cast piece, examples of which are shown in Figs. 13 to 18, Fig. 23A, and Fig. 24A, and a connecting tube formed in one unitary, integrally cast piece, examples of which are shown in Figs. 22, 23B, and 24B, and the downstream end portion of the exhaust manifold is connected to the upstream end of the connecting tube by the fastening device such as the bolt. Therefore, the exhaust manifold and the collecting tube can be manufactured easily by casting. Additionally, the cast pieces may be assembled and disassembled easily within the limited space of the engine.

Furthermore, the connecting tube includes a plurality of exhaust passages merged into the one exhaust passage at a downstream region thereof, examples of which are shown in Figs. 22, 23B, and 24B. In this construction, the disturbed flow of the exhaust gas does not occur inside the connecting tube.

Accordingly, Watanabe does not disclose or suggest each and every feature of independent claim 8 and does not provide the above described potential advantages. Therefore, Applicant respectfully requests the rejection of independent claim 8 be withdrawn for at least the reasons described above. Furthermore, claims 9 and 10 depend from independent claim 8. Therefore, Applicant respectfully requests the rejection of these claims be withdrawn for at least the reasons discussed above.

Additionally, claim 10 recites, "The exhaust pipe collecting structure according to Claim 9, wherein the exhaust manifold is integrally cast by locating the casting parting plane of the exhaust manifold within one continuous plane." Watanabe does not disclose such an exhaust manifold that is integrally cast. Rather, the manifold structure of Watanabe is four separate exhaust ports welded to a flange portion, as discussed above. Thus, the rejection of claim 10 should be withdrawn for this additional reason.

Claims 4 and 7 (rejected under 35 U.S.C. 103(a))

Claim 4 recites, among other features, "the first exhaust sub-collecting pipe includes the first exhaust pipe group and the first joint portion, and is formed in one unitary, integrally cast piece, and the second exhaust sub-collecting pipe includes the second exhaust pipe group and the second joint portion, and is formed in one unitary, integrally cast piece, the unitary, integrally cast pieces being separable from each other." The Office action cites Maeda as teaching these claimed features. However, the Office action provides no specific reference to the portions of Maeda that allegedly make such a disclosure, and Applicant could find no such disclosure.

Rather, Maeda discloses exhaust ports welded to a flange of the exhaust manifold and first and second downstream portions that are welded (see col. 4, lines 19-26). Maeda discloses an exhaust pipe collecting structure including welded pipes, similar to that described in the

background art (description of the related art) in the subject application, and such a configuration may not be able to provide the potential advantages offered by the claimed invention. In particular, since the plurality of parts (e.g., pipe members) having complex shapes are welded, production efficiency may be reduced due a relatively involved construction as compared to an exhaust pipe collecting structure that is cast using a mold. Further, since it is necessary to connect the exhaust pipes and the exhaust manifold flange to each other integrally by welding, the four exhaust pipes are inseparable, thus it is difficult to assemble and disassemble them into and from the engine within a limited space.

Furthermore, Applicant has amended claim 4 to include, among other features, “the second joint portion being arranged in parallel with the first joint portion so that an exhaust gas in the first joint portion and an exhaust gas in the second joint portion flow in parallel,” and “wherein the connecting tube includes two parts having a joint surface at which the two parts are joined to each other, the joint surface extending along a flow of the exhaust gas in the connecting tube, the first joint portion and the second joint portion are connected to each other by a fastening device, and the joint surfaces of the two parts are joined by a fastening device, to join the first joint portion, the second joint portion, and the connecting tube.”

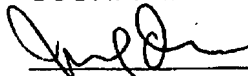
In contrast, neither Maeda nor Mashiko disclose that the first joint portion and the second joint portion are connected to each other by a fastening device, and the joint surfaces of the two parts are joined by a fastening device, to join the first joint portion, the second joint portion, and the connecting tube. Rather, Maeda discloses two downstream portions that do not join together (see Fig. 1). Furthermore, Mashiko discloses in Figure 41 that four exhaust passages couple to an exhaust pipe via a coupling member that only attaches to an external coupling portion of each element. In other words, Mashiko does not disclose two joint portions that share a joint surface

extending along a flow of the exhaust gas where the two joint portions are joined by a fastening device. By providing joint portions that share a joint surface that extends along a flow of exhaust gas that are joined by a fastening device, the exhaust manifold may be easily assembled and disassembled in the engine.

Accordingly, even in combination Maeda and Mashiko do not teach or suggest each and every element as claimed in independent claim 4 and do not provide the potential benefits of the claimed configuration. Thus, amended claim 4 is not anticipated or rendered obvious in view of the combination of Maeda and Mashiko. Therefore, Applicant respectfully requests the rejection of independent claim 4 be withdrawn for at least the reasons discussed above. Claim 7 depends from claim 4. Thus, Applicant respectfully requests the rejection of claim 7 be withdrawn for at least the reasons discussed above.

Applicant believes that this application is now in condition for allowance, in view of the above amendments and remarks. Accordingly, applicant respectfully requests that the Examiner issue a Notice of Allowability covering the pending claims. If the Examiner has any questions, or if a telephone interview would in any way advance prosecution of the application, please contact the undersigned attorney of record.

Respectfully submitted,  
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